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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SIEW, JEFFREY

ART UNIT	PAPER NUMBER
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1637

DATE MAILED 02 10 2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/886,802

Applicant(s)

GRUBER ET AL.

Examiner

Jeffrey Siew

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 27 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-19, 21, 23-54, 57-81 and 83-172 is/are pending in the application.
- 4a) Of the above claim(s) 105-167 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-19, 21, 23-54, 57-81, 83-104, 168-172 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 27 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. This application contains claims 105-167 are drawn to an invention nonelected with traverse in Paper No. 7. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Objections

2. Claim 75 is objected to for the extra letter s after analysis.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 93,94,102 & 103 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A) Claim 94 is indefinite because it is unclear what is varying in the surface. A static surface that is continuously varying is contradictory and ambiguous.

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B) Claim 93,102 & 103 is indefinite because it is unclear in claim 93 what is changing in the non-homogenous region of the static surface

The response states that amendment has clarified the grammatical objections and 112 second paragraph rejections. The amendments do not obviate the objections and rejections as the amendments do not clarify the claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-19,21,23-54,57-81,83-89, 104,168-170 & 172 are rejected under 35

U.S.C. 102(b) as being anticipated by Ulmer et al (US5,776,674 July 7, 1998).

Ulmer teach the apparatus and method of using an movable optical trap to capture bound and unbound multiple probes and trapping the probes and tracking the probe as it interacts with a target (see whole document esp. abstract, col. 1 lines 45-62, col. 5 lines 17-30 & col. 7 lines 27-44). They teach a multi-position scanning laser trap which is used to translate multiple single molecule complexes in parallel as in an array fashion for increased throughput. Particles can be

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moved independently (see col.12 lines 37-45). They teach that Multibeam photonic Tweezers for use of multiposition traps (see col. 12 line 49) They teach the use of laser tweezers traps (see col.12 line 49 & col. 1 line 39).. A computer is operably connected to apparatus (see col.12 line 21). They teach the use of video camera (see col.2 line 44). They teach that optical trap may include objective lens and beam (see figure 2A-2H & col. 2 line 50-52). They teach the use of various lasers and fluorescent dyes to detect the spectrum of the label (see col. 10 line 62 –col.11 line 21). They teach the assay of several biological and chemical material such as antigen and antibody, DNA oligonucleotide extensions (see col. 5 lines 17-30 & col.6 line 15-42). They teach the use of subcells or regions in which the particles are moved (see Figure 3A & col. 4 lines 30-40).

The response filed 11/27/02 has been fully considered and deemed not persuasive. The response states the Ulmer do not teach more than two probes in the three dimensional array. The three dimensional probe reads broadly on Ulmer's probes as they occupy the three dimensions of space. Moreover they argue that Ulmer do not teach trapping several particles simultaneously. Ulmer et al does teach multiple particles (see col.5 lines 20-30). Moreover the claims read broadly to at least include two probes for inclusion in a array and tracking at least one of the two probes. Ulmer et al teaching of simultaneous multiple tracking would still read on the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 90-104, & 171 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uhner et al (US5,776,674 July 7, 1998) in view of Crier et al (US6,055,106 April 25, 2000).

The teachings of Uhlmer et al are described previously.

Uhlmer et al do not teach beam altering optical element.

Grier et al teach the formation of various beam patterns to create arrays of optical traps (see whole document & col.3 line 60-65). They teach the use of diffractive optical element which can include computer generated holograms which split the input light beam into patterns of different regions (see col. 4 lines 56-65). They teach the beams then enter the back aperture 24 of objective lens 20 (see Figure 3) They also teach the use of dichroic beamsplitter to split beam (see col. 5 line 53-64). They teach dynamically translating of traps (see col.5 lines 22-44).

One of ordinary skill in the art would have been motivated to apply Grier et al's teaching of multiple optical trap to Ulmer et al's method of assaying in order to increase the throughput of samples. Grier et al states the deficiency in manipulating multiple particles with multiple

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beams of light in prior art technology (see col. 1 lines 25-30) . Grier et al state that the use of holograms or dichroic mirrors provide the advantage of creating multiple beams to create multiple traps from within a single laser source. It would have been prima facie obvious to apply Grier et al's mutiple beam apparatus to Uhlmer et al's method in order to screen multiple samples simultaneously thus increasing throughput analysis and/or production.

The response states that Grier et al and Ulmer et al's teach different inventions. However, the response admittedly states the benefit of Grier et al's invention is that it provides lower rate of photodegradation and more wider angle. As stated in the rejection such benefits would provide the motivation to combine Grier et al's teaching of holographic traps to Ulmer et al's detection. The teachings of Grier et al combined with level of skill in the art would provide a reasonable expectation of success. The rejections are maintained.

SUMMARY

6. No claims allowed.

CONCLUSION

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119.

Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Tracey Johnson for Art Unit 1637 whose telephone number is (703)-305-2982.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Before Final FAX (703) 872-9306 or After Final FAX (703) 30872-9307.

Jeffrey Siew
JEFFREY SIEW
PRIMARY EXAMINER
2/6/03